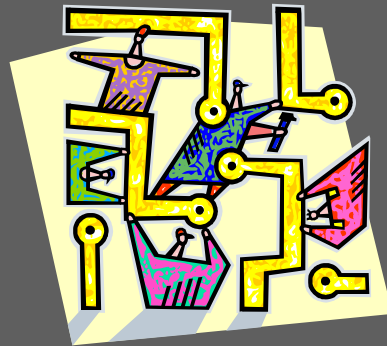


# ANATOMY OF A PROJECT: Concept thru Implementation

- The Winning Concept
- Developing a Project
- Implementing a Project

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## The Winning Concept

- Why develop an energy project ?
- Characteristics of good energy projects
- Ways to identify good energy projects
- Selecting the winner

## **Why Develop an Energy Project ?**

- Conserve energy & water resources
- Cut utility costs
- Respond to crises/opportunities
- Reduce dependence on imported oil, external power & gas supplies
- Reduce vulnerability
- Reduce pollution
- Take advantage of incentives/rebates
- Improve management & control
- Make infrastructure improvements

## **Characteristics of Good Energy Projects**

- Technically sound
- Good economics
- Supports or enhances operations/mission
- No actual or perceived adverse impact on operations, working conditions, health, safety or morale
- Low risk

## **Ways to Identify Good Energy Projects**

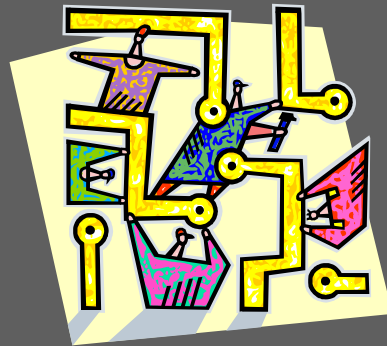
- Energy Manager knowledge/familiarity of facilities
- Observations & data analysis
- Audits and Surveys
- Data logging
- Technology transfer
- Others

## **Selecting the Winner**

- Review all identified Energy Conservation Opportunities
- Cost vs. Benefit (Life Cycle Cost Analysis)
- Stakeholder support & involvement
- Funding availability
- Potential grants, incentives, rebates

## **ANATOMY OF A PROJECT: Concept thru Implementation**

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## **Developing a Project**

- Proposal preparation and programming
- Stakeholder identification and acceptance (buy –in)
- Approvals/Clearances/Permits
- Funding/Financing
- Deciding on contract mechanism
- Detailed energy survey/audit
- Design
- Cost Estimate and Savings Calculations
- Reviews and approvals

## **Proposal Preparation and Programming**

- Initiates project into the system
  - Make it comprehensive and convincing
  - Follow required procedures, forms, template
- Write it for the audience you are trying to convince for approval and funding
- Budget estimate and cost savings estimate
- Prior stakeholder coordination helpful
- If at first you don't succeed, try again

## **Stakeholder Identification and Acceptance (Buy-in)**

- Determine stakeholders
- Invite their participation
- Insure everyone understands the plan
- Keep stakeholders informed of progress
- Incorporate their feedback

## **Approvals/Clearances/Permits**

- Site approval
- Environmental clearances
- Historical preservation considerations
- Building/construction permits (State & Local)

## **Funding/Financing**

- Where is the money ?
- Local funds
- Centrally managed funds
- Financed project
  - ESPC
  - UESC
- OPM (Other People's Money)
  - Grants
  - Rebates
  - Tax incentives

## **Deciding on Contract Mechanism**

- ➔ In-house or contract ?
- ➔ Design-Build or Design-Bid-Build ?
- ➔ May depend on funding availability
- ➔ Performance Contracting – ESCOs
  - ESPC
  - UESC

## **Detailed Energy Survey/Audit**

- ➔ Obtain more data on selected ECOs
- ➔ Support project design & cost savings estimate
- ➔ Equipment and control schedules
- ➔ Establish performance baseline of existing system
- ➔ Data logging

## **Design**

- ➔ Drawings and Specifications
- ➔ Good application of proven technology
- ➔ Optimize energy efficiency
- ➔ Good fit with customers O & M
- ➔ Concept/energy modeling to support design solution

## **Cost Estimate and Savings Calculations**

- ➔ Detailed cost estimate
  - Labor/Material/Equipment Costs & Markups
  - Use cost estimating guides and vendor quotes
  - Reflect local area cost factors
- ➔ Savings Calculations
  - Existing vs. Proposed
  - Investment and Maintenance savings
  - Savings modeling



## Reviews and Approvals

- Key stakeholders should participate in the design review process
- Conformance to requirements & design criteria
- Engineering integrity
- Constructability
- Cost estimate vs. Budget
- Comments from previous reviews should all be addressed by final design submittal

## ANATOMY OF A PROJECT: Concept thru Implementation

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## **Implementing a Project**

- Construction contract/delivery order award
- Stakeholder partnering meeting
- Construction schedule
- Managing RFIs, changes and modifications
- Turnover/final inspection
- M & V plans
- Warranties
- Post Occupancy Audit

## **Construction Contract/Delivery Order Award**

- Kickoff meeting
  - Safety Plan
  - QC Plan / Inspection surveillance
  - Procedures/notification/POCs
    - Access
    - Outages and disruptions
    - HAZMAT Plan
  - Payment processing

## Stakeholder Partnering Meeting

- ⇒ Very helpful for a smooth running project
- ⇒ Team Building
  - Everyone responsible for success
  - Opens lines of communication
- ⇒ Identify obstacles and solutions
- ⇒ Define roles and responsibilities
- ⇒ Set procedures and timelines for actions
- ⇒ Schedule follow up meetings

## Construction Schedule

- ⇒ Identify significant milestones
- ⇒ Phases
- ⇒ Operational coordination
- ⇒ Progress meetings/updates

## **Managing RFIs, Changes and Modifications**

- Requests for information
- Changes and Modifications
  - Unforeseen
  - Customer
  - Contractor
- Evaluate for impact on cost, schedule & savings
- Timely coordination and response

## **Final Inspection/Turnover**

- Punch list
- Commissioning
- Beneficial occupancy/project out brief
- As built
- O & M manuals
  - Occupant training
  - Maintenance training

## **M & V Plans**

- Required on ESPC projects
- Basis for guaranteed savings
- Measurement type
  - Engineering calculations
  - Metering and monitoring
  - Utility bill analysis
  - Computer simulations
- Support grants/incentives/rebates

## **Warranties**

- Get documented points of contact for warranty action
- Make sure in-house/contract maintenance personnel understand warranty provisions
- Assure maintenance work does not void warranty
- Don't hesitate to exercise

## Post Occupancy Audit

- Schedule 6-12 months following beneficial occupancy
- Capture lessons learned
- Verify expectations and savings were achieved
- Feed back on design and technology
- Occupant comments/concerns – happy ?

## Questions?

